

# Epidemiological Perspective of National Leprosy Eradication Programme in Maharashtra: Focusing on “Tribal Hot-spot” of Tribal District

Dhananjay Katkar, Balu Natha Mote<sup>1</sup>, Ambadas Adhav<sup>2</sup>, Thirumugam Muthuvel<sup>3</sup>, Suhas Kadam<sup>4</sup>

Consultant, National Leprosy Eradication Programme, Maharashtra, <sup>1</sup>State Programme Manager, Non Communicable Diseases, Government of Maharashtra, <sup>2</sup>Programme Manager, Community Health, MAHAN Trust (Meditation, AIDS, Health, De-addiction, Nutrition), Amravati, Maharashtra, <sup>3</sup>Independent Researcher, Vellore, Tamil Nadu, <sup>4</sup>Program Coordinator, Village Health Programme, Jan Swasthya Sahyog, Chhattisgarh, India

## Abstract

**Background:** Leprosy or Hansen’s disease, a chronic infectious disease caused by *Mycobacterium leprae* is a serious public health concern because of associated case load, morbidity and stigma attached to it. India achieved elimination of leprosy as a public health problem (prevalence rate [PR]<1 case/10,000 population) at the national level on January 1, 2006, still 19% districts in the country report PR more than one. In Maharashtra, it is found that very few districts within the state or very few pockets within the district are actually having leprosy burden. **Objectives:** (1) Identification of region-wise actual “hot-spot” districts/pockets within state of Maharashtra. (2) Further drop-down below the district and block to tribal belt for understanding the actual high risk area/belt within the tribal districts. **Methods:** Secondary data analysis of leprosy patients registered in the State during the period 2008–2015. **Results:** PR per 10,000 was found more in Vidharbha region followed by rest of Maharashtra and then Marathwada. Analysis showed that, there are tribal districts and tribal area within tribal districts which are having higher leprosy burden as compared to the all other districts indicating need of allocation of programme funds and facilities to these tribal belts for the effective control and elimination of leprosy. **Conclusion:** National Leprosy Eradication Programme should focus on tribal belt for effective control. Without giving extra attention to these tribal areas within high risk district/pockets efforts of eradication of leprosy by 2018 would be unrealistic and impractical.

**Keywords:** Burden, elimination, eradication, leprosy, tribal

## INTRODUCTION

Leprosy or Hansen’s disease is caused by *Mycobacterium leprae*. It is serious public health concern because of associated case load and stigma attached to it. Nearly 16 million cases have been treated worldwide and elimination of leprosy (cases < 1/10,000 persons) was achieved in 2000.<sup>[1]</sup> At the beginning of 2014, a total of 215,656 new cases of leprosy with “New case detection rate” of 3.81 per lakh population and the registered cases were 180 618 with prevalence rate (PR) of 0.32/10,000 population were detected globally. South–East Asia accounted for 116 396 cases with PR of 0.63/10,000 and “new cases detected” were noted 155,385.<sup>[2]</sup>

India achieved elimination of leprosy as a public health problem (PR < 1/10,000) on 1<sup>st</sup> January 2006 at national level, still 19% districts in the country report PR more than one.

In 2013, India reported a total of 126, 913 newly diagnosed cases (2013).<sup>[3]</sup> PR/10,000 for Chhattisgarh, Dadra and Nagar Haveli was noted between 2 and 4 while Bihar, Maharashtra and West Bengal showed slight increase in PR more than one. In Maharashtra, the annual new case detection rate’ (ANCDR) was 22.36/100,000, adding extra burden to the national PR.

Population level elimination strategies highlights the high endemicity district and block approach for the intervention of leprosy. Despite, government programme implementation plan

**Address for correspondence:** Dr. Dhananjay Katkar,

Flat No B2/202, Building Name Mont Vert Finesse, Block Sector Opp., 3M Car Care, Pashan, Baner Pashan Link Road, Pune - 411 021, Maharashtra, India.

E-mail: drsuhas.tiss@gmail.com

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

**For reprints contact:** reprints@medknow.com

**How to cite this article:** Katkar D, Mote BN, Adhav A, Muthuvel T, Kadam S. Epidemiological perspective of National Leprosy Eradication Programme in Maharashtra: Focusing on “Tribal Hot-spot” of Tribal District. Indian J Community Med 2017;42:174-6.

**Received:** 24-05-17, **Accepted:** 05-07-17

### Access this article online

Quick Response Code:



**Website:**  
www.ijcm.org.in

**DOI:**  
10.4103/ijcm.IJCM\_36\_16

allocating funds to those districts with high PR and trend of PR is stagnant, attributed to the failure of optimum utilization of health care facilities and less focus on actual high risk belts and hot-spot area within the district or state. A two-way priority intervention (district and block) is not sufficient for control and elimination of leprosy. It is found that very few districts within the state or very few pockets within the district could be the actual zone of the leprosy cases, which need to specific attention to achieve the national target of eradication by 2018. This paper will focus on “high risk pockets” and “tribal hot-spot” in the districts of Maharashtra.

### Objectives of study

1. Region-wise identification of high leprosy burden area within Maharashtra
2. Identification of “Hot-spot” areas within high risk district of Maharashtra
3. Identification of child, female and multibacillary (MB) and Grade 2 disability cases within “Hot-spot area.”

### METHODS

Secondary data analysis method used (National Leprosy Elimination Programme Maharashtra Maharashtra State Leprosy Case Tracking System). Last 8 years (2008–2015) leprosy related data of all 34 districts was obtained. This data was categorized into 3 main regions: Vidarbha, Marathwada and rest of Maharashtra (ROM). Further, 34 districts were divided into 2 parts: Tribal and nontribal and finally analysis of actual tribal area within districts were done.

### RESULTS

The Figure 1 shows four hills (high burden area in ROM) and three hills (high burden area in Vidarbha region), in ROM area, Dhule, Jalgaon, Nasik, Raigad, Ratnagiri, Sindu durga, Thane, and Nandurbar are districts showing high burden of leprosy cases as compared to other part of ROM. In Vidarbha region, Amravati, Buldhana, Chandrapur, Gadchiroli, Gondia, and Wardha are the districts having high prevalence of leprosy as compared to the other districts. Only Hingoli in Marathwada has high PR/10,000. This figure implies that the tribal district of each region that has high burden of leprosy disease as compared to the other districts. Figure 2 shows one hill (high PR) in nontribal area while there are 4–5 hills (high PR) in tribal districts. Therefore, tribal districts are likely to have high burden of leprosy as compared to the nontribal districts. Of those, Buldhana, Bhandhara and Wasim districts are showing high PR as compared to the other parts of districts while in tribal districts almost all districts are showing high PR [Figure 1].

Further, analysis shows actual tribal area having high burden of leprosy cases as compared to the overall in districts. 50<sup>th</sup> percentile within tribal area have PR ranging between 1 and 2.5/10,000 populations which exceeds the overall district's PR (0.75–1.25/10,000 populations). Long length

of box plot (left side) in [Figure 2a] indicates that within the tribal district, those areas are predominantly tribal belts with PR ranging from 0.5 to 4.5 exceeding the overall PR of districts (0.5–3.5). The highest PR for the overall district is 3.5 while the highest PR for the actual tribal area within the tribal district is 4.5. Thus the burden of leprosy is more in the tribal area within tribal district. Gadchiroli district emerged as outlier having high PR of 4.5/10,000 in tribal district [Figure 2a].

Figure 2b shows the ANCDR of tribal area within the tribal districts (right side box plot) exceeds the ANCDR of overall tribal district (left side box plot). Gadchiroli and Chandrapur again emerged as outlier having ANCDR 50/100,000, indicating need of targeted approach for the early identification of leprosy in these districts. It also shows that, the actual tribal area (50<sup>th</sup> percentile) having ANCDR above 15 which noted as high as 45, while in case of overall district's performance (50<sup>th</sup> percentile) shows the ANCDR above 15 which noted as high as 30. Leprosy affects maximum proportion of actual tribal area (tribal belt) within the tribal district. Median population of tribal area shows the ANCDR above 30 which increases to as high as up to 45 as compared to overall district's ANCDR 20 which reaches to 30 indicating half the population of tribal area's ANCDR exceeds by 15 points as compared to overall district. Eventually, indicating need of more programmatic focus on actual tribal area's Primary Health Centre (PHC)/belts within tribal district for overall control of leprosy burden.

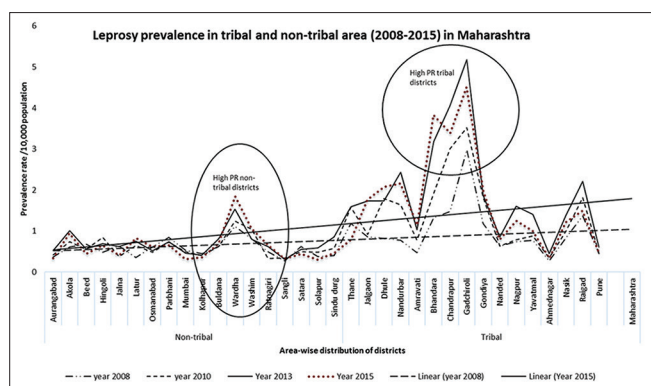
### Burden of leprosy in actual tribal (belt) area within tribal district

Overall PR of leprosy in actual tribal area is more (2.25) as compared to the tribal district (1.66) [Table 1]. The average ANCDR of actual tribal area shows high number of cases (32) as compared to overall district average ANCDR (24). Table 1 shows the average active new cases are (485) of which, again one fourth active new cases (123) were contributed by actual tribal area/belt PHCs. Female cases, grade 2 disability cases and all other types of leprosy burden are found within actual tribal area (tribal belt/PHC).

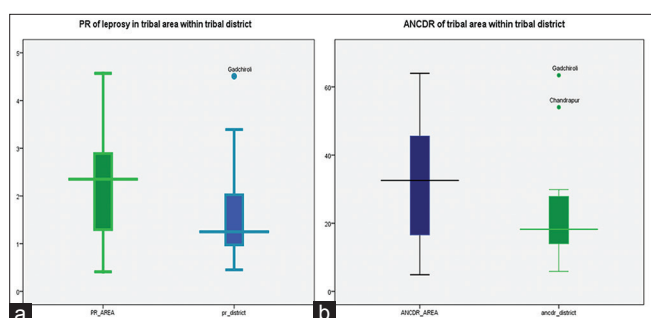
### DISCUSSION

Maharashtra's PR was above 1 for past few years attributed to the poor performance of Vidarbha region. This indicates a need for “targeted intervention” in the “Tribal” districts. When we excluded the Vidarbha region from the analysis, then Maharashtra's PR reduced to <1. From Figure 1, we can conclude that burden of leprosy (PR) is more in Vidarbha region followed by ROM and Marathwada. This burden in Vidarbha region may be attributed to the earlier lack of health care facilities, skills among health care workers to identify leprosy cases, infection prone area, challenging geographic and tribal area of the Vidarbha.<sup>[4–6]</sup>

In Maharashtra, a total of 15,498 new cases diagnosed, of these 8325 MB, 6770 (43%) were women and 1912 (12%) were



**Figure 1:** Leprosy prevalence in tribal and nontribal area (2008–2015) in Maharashtra. PR: Prevalence Rate. Source: Maharashtra State Leprosy Case Tracking System – Portal



**Figure 2:** Box plots showing (a) PR and (b) ANCDR among entire tribal district (right) and actual tribal area within the tribal district (left) PR: Prevalence rate/10,000 population; ANCDR: Annual New Case Detection Rate/100,000 population. Source: Maharashtra State Leprosy Case Tracking System (LCTS)– Portal.

**Table 1: National Leprosy Eradication Programme Maharashtra Indicators for tribal areas within the tribal districts (2014-2015 excluding new district Palghar)**

Indicators	Tribal areas	Tribal districts
PR/10,000 population	2.25	1.66
ANCDR/100,000 population	32.64	24.06
Average active new cases ( <i>n</i> )	123.73	485.07
Multi-bacillary (%)	57.97	56.36
Female (%)	45.76	44.71
Grade 2 disability (%)	7.33	4.58
Child (%)	10.62	11.68

Source: Maharashtra State Leprosy Case Tracking System - Portal. PR: Prevalence rate, ANCDR: Annual new case detection rate

children. Even within state of Maharashtra better performing districts like Satara and Pune (with PR around 0.5/10,000) showing gender-wise, urban-rural area wise, MB cases-wise disparities.<sup>[7-9]</sup>

Eventually, it is the responsibility of the state to prioritize these “hotspots” within the state/districts.<sup>[9]</sup> for better targeted intervention. PR at district level might be remain constant for consecutive years but actual case load at ground level varies from state to state, district to district, within district, region to region attributed to; disparities in newly diagnosed cases, tribal, nontribal, gender-wise, urban-rural area-wise, migration-wise, MB cases etc.

## CONCLUSION

Maharashtra is very much close to achieving the target and for that even a single new case with grade 2 disability/new child/female cases should be treated as evidence of hidden endemicity in tribal belt. Once tribal area of that respective PHC reported zero cases then continuous and sustaining efforts for identification of new cases should be done for at least five consecutive years. So that area/PHC can be called as “Leprosy free zone.” Eventually, this baseline analysis shows that there is need to bring in concept of reporting the leprosy burden of tribal and nontribal areas to understand the actual burden.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

- World Health Organization. Global Leprosy Strategy 2016-2020: Accelerating Towards a Leprosy-Free World. World Health Organization; 2016.
- World Health Organization. Leprosy: Weekly Epidemiological Record. World Health Organization; 2016.
- Sachdeva S, Sood AK. Leprosy Elimination Monitoring (LEM) in India: A novel exercise of monitoring, learning, and capacity building. *Indian J Community Med* 2014;39:59-62.
- NLEP Maharashtra. Maharashtra State Leprosy Case Tracking System (LCTS) – Portal. Available from: <http://www.dhsmh-lep.org/2013>. [Last accessed on 2016 Oct 25].
- NLEP Maharashtra. Maharashtra State Leprosy Case Tracking System (LCTS) – Portal. Available from: <http://www.dhsmh-lep.org/2014>. [Last accessed on 2016 Oct 25].
- NLEP Maharashtra. Maharashtra State Leprosy Case Tracking System (LCTS) – Portal. Available from: <http://www.dhsmh-lep.org/2015>. [Last accessed on 2016 Oct 25].
- Mohite RV, Mohite VR, Durgawale PM. Differential trend of leprosy in rural and urban area of Western Maharashtra. *Indian J Lepr* 2013;85:11-8.
- New case detection rate of leprosy goes up in Maharashtra. *Times of India* 2011;10-12. Available from: <http://timesofindia.indiatimes.com/city/pune/New-case-detection-rate-of-leprosy-goes-up-in-Maharashtra/articleshow/8593159.cms>. [Last accessed on 2015 May 20].
- World Health Organization. Scale up Efforts Against Leprosy; Focus on Preventing Disabilities in Children. World Health Organization; 2017.